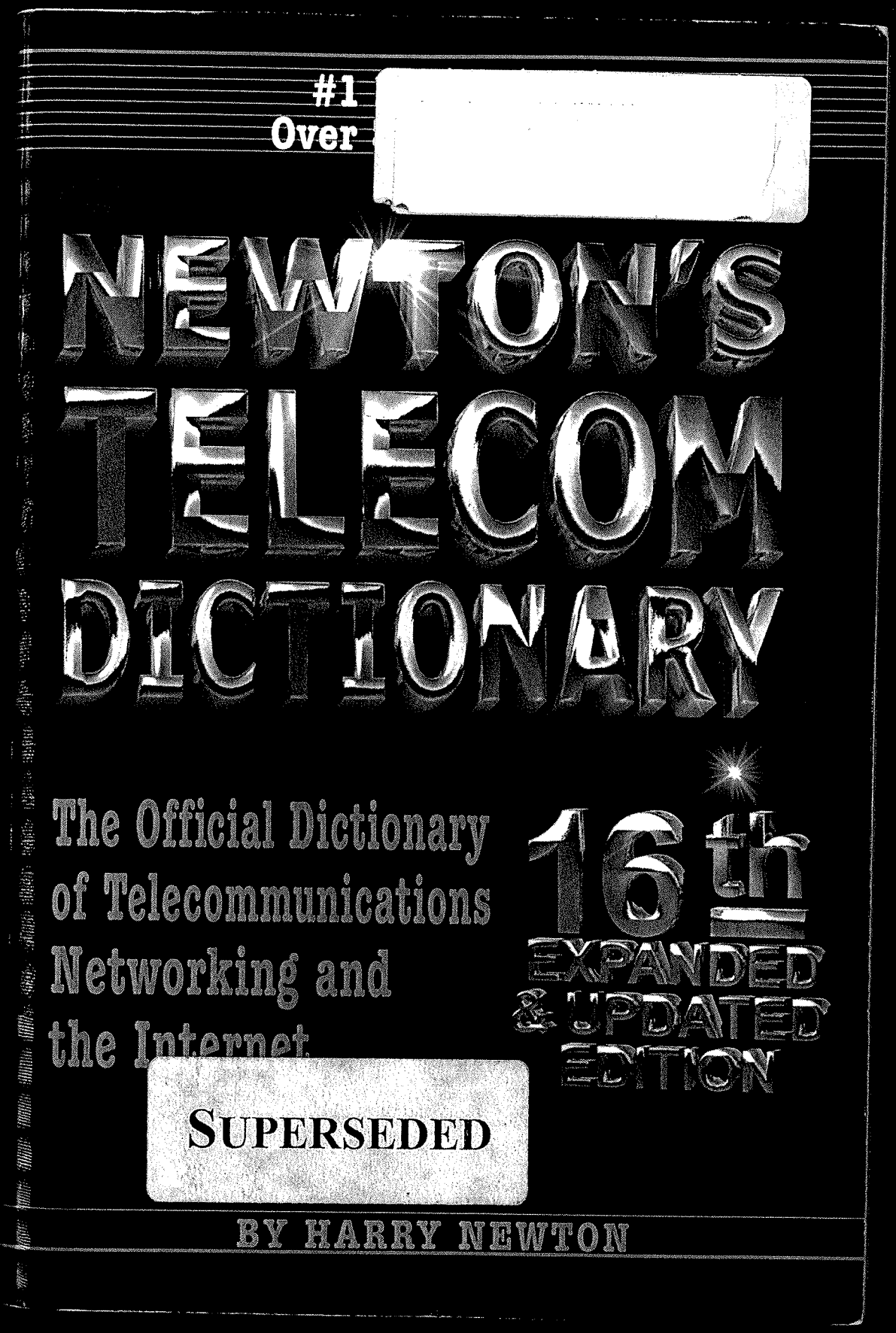
EXHIBIT E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Over
NEWTON'S
TELECOM
DICTIONARY
The Official Dictionary
of Telecommunications
Networking and
the Internet
16th
EXPANDED
& UPDATED
EDITION
SUPERSEDED
BY HARRY NEWTON

NEWTON'S TELECOM DICTIONARY

The Official Dictionary of
Telecommunications & the Internet

16th Updated, Expanded and Much Improved Edition

NEWTON'S TELECOM DICTIONARY

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still sends data asynchronously to the modem while communications between modems is synchronous.

Class 4
This class introduces two new concepts Adaptive Packet Assembly and Data Phase Optimization, both of which further enhance performance. Adaptive Packet Assembly means that the size of the packets in which data is sent between modems is altered according to the quality of the physical link. The higher the line quality, the larger the packets. Larger packets, while more efficient (the ratio of user data to control data is higher), are also more susceptible to errors. Data Phase Optimization means that repetitive control information is removed from the data stream to make packets more efficient. Both techniques, when combined with Class 3, yield a protocol efficiency of about 120 percent (A V.22bis 2400 bps modem will realize approximately a 2900 bps throughput).

Class 5
This class implements MNP basic data compression to realize a net throughput efficiency of 200 percent on average. (A 2400 bps modem will realize 4800 bps). Class 5 uses a real-time adaptive algorithm to compress data. The real-time aspects of the algorithm allow the data compression to operate on interactive terminal data as well as file transfer data. The adaptive nature of the algorithm means data compression is always optimized for the user's data. The compression algorithm continuously analyzes the user data and adjusts the compression parameters to maximize data throughput.

Class 6
This class implements Universal Link Negotiation and Statistical Duplexing. The first feature allows a single modem to operate at a full range of speeds between 300 and 9600 bps, depending on the maximum speed of the modem on the other end of the link. Modems begin operation at a common slower speed and negotiate the use of an alternative high speed modulation technique. The Microcom AX/9624c modem is an example of a modem that uses Universal Link Negotiation, starting with 2400 bps V.22bis technology and shifting to 9600 bps V.29 fast train technology, if the other modem has that technology too. Statistical Duplexing allows the modem to simulate full-duplex service on the half-duplex V.29 modem connection.

Class 7
This class implements a more efficient data compression method than the one used in Class 5. The difference between the two classes is that Class 5 realizes an average 200 percent speed improvement over a non-MNP modem, versus an average 300 percent improvement for Class 7. Class 7 data compression uses Huffman encoding with a predictive algorithm to represent user data in the shortest possible Huffman codes. In addition to Class 5 and Class 7 data compression, MNP also supports V.42bis data compression. Based on the Lempel-Ziv-Welsh data compression model, V.42bis supports an average 400 percent efficiency improvement.

Class 8
Not defined.

Class 9
This class reduces the amount of time required for the modem to perform two frequently occurring administrative activities: to acknowledge that a message was received and to retransmit information following an error. Message acknowledgment is streamlined by "piggy-backing" the acknowledgment in its own dedicated packet. Retransmission is streamlined by indicating in the error or Negative Acknowledgment Packet (NAK) the order sequence number of each of the failed messages. Rather than sending all the messages over again (even the good ones) from the point of the error, as is usually done with error correcting protocols, only the failed messages are resent.

Class 10
MNP Class 10 consists of Adverse Channel Enhancements that optimize performance in environments with poor or varying line quality, such as cellular telephones, international telephone calls, and rural telephone service. These enhancements fall into four categories:
1. Multiple aggressive attempts at link setup
2. Adapting packet size to accommodate varying levels of interference
3. Negotiating transmission speed shifts to achieve the maximum acceptable line speed
4. Dynamically shifting to the modem speed most suitable to transmission line conditions
See Error Control Protocols and LZW.

Microcomputer The combination of CPU (Central Processing Unit) and other peripherals (I/O, memory, etc.) that form a basic computer system. See Microprocessor.

Microfiche A rectangular sheet of transparent film that contains multiple rows of greatly reduced page images of reports, catalogs, rate books, etc.

Microfilm A small roll of photographic film which can hold several thousand document pages which, when projected onto a screen, produces a legible copy of the item or form photographed.

Microfloppies The latest generation of floppy disks at 3 1/2 inches diameter, invented by Sony. The microfloppy is used in the Apple Macintosh and most MS-DOS laptop computers. Used in an MS-DOS machine, a 3 1/2 inch microfloppy diskette will currently format to carry 1.44 million bytes of data — equivalent to about 500 pages of double spaced text.

Microform Microform means Microfiche and Microfilm.

Micrographics Conversion of information into or from microfilm or microfiche.

Micron One thousandth of a millimeter. Or one millionth of a meter. A unit of measurement corresponding to 1/25,000 of an inch. A micron can be used to specify the core diameter of fiber-optic network cabling. This diameter should match your hardware vendor's requirements; but if you install fiber before you buy the equipment, specify the 62.5-micron size.

Micropayment An on-line payment of a dime or less. Touted as the key catalyst for Internet commerce, micropayments were conceived as a means of generating revenues which would be significant for vendors, in the aggregate, while being so trivial to the individual users that they would not hesitate make micropayments freely. While still rhetorical, micropayments were to apply to such services as custom newsfeeds, processing applets and data queries.

Microphone A transducer that changes the air pressure of sound waves into an electrical signal that can be recorded, amplified and/or transmitted to another location.

Microprocessor An electronic circuit, usually on a single chip, which performs arithmetic, logic and control operations, with the assistance of internal memory. The microprocessor is the fabled "computer on a chip," the "brains" behind all desktop personal computers. Typically, the microprocessor contains read only memory — ROM — (permanently stored instructions), read and write memory — RAM, and a control decoder for breaking down the instructions stored in ROM into detailed steps for action by the arithmetic logic unit — ALU — which actually carries out the numerical calculations. There's also a clock circuitry which connects the chip to an

exterior quartz crystal whose vibrations coordinate the chip's operations, keeping everything in step. And finally, the input/output section directs communications with devices on the outside of the chip, such as the keyboard, the screen and the various disk drives.

The Fortune Magazine issue of May 6, 1991 contained a very good explanation of chips and microprocessors (usually used interchangeably). Here is the article, slightly condensed:

Chips today can store and retrieve data, perform a simple mathematical calculation, or compare two numbers or words in a few billionths of a second. And they can carry out tens of thousands of such tasks in the blink of an eye. Today's chips contain millions of transistors, capacitors, diodes, and other electronic components, all connected by metallic threads a fraction of the diameter of a human hair. A single chip the size of a fingernail can store dozens of pages of text or combine circuits that can perform scores of tasks simultaneously.

Most chips fall into one of two categories - memory chips and logic chips. Memory chips have the easier job: They merely store information that will be manipulated by the logic chips, the ones with the smarts. Today's biggest-selling memory chip (mid-1991) is the one-megabit dynamic random access memory, or DRAM. Each DRAM is a slice of silicon embedded with a lattice of 1,000 vertical and 1,000 horizontal aluminum wires that circumscribe one million data cells. The densest DRAM designed so far has 64 million cells.

Think of those wires as streets and those cells as blocks. Each block contains a transistor that can be turned on or off — to signify 1 or 0 — and that can be identified by it's unique "address" in the wire grid, much like a house in a suburban subdivision. Each digit, letter, or punctuation mark is represented by 1's or 0's stored in eight-cell strings. (See ASCII.) The word "chip" takes up 32 cells in a memory chip. Most PCs sold today have at least eight one-megabit DRAMs.

It's the job of the logic chips to turn those transistors in the DRAMs on or off, and to retrieve and manipulate that information once it's stored. The most important and complex logic chips are microprocessors like Intel's 80386DX, the brains of the more powerful IBM-compatible PCs sold today. If the structure of a memory chip is a suburban subdivision, the layout of a microprocessor is more like an entire metropolitan area, with distinct neighborhoods devoted to different activities. A typical microprocessor contains among other things:

- A timing system that synchronizes the flow of information to and from memory and throughout the rest of the chip.
- An address directory that keeps track of where data and program instructions are stored in the DRAMs.
- An arithmetic logic unit with all the circuits needed to crunch numbers.
- On-board instructions that control the sequence of microprocessor operations.

Other logic chips in a computer take their cues from the microprocessor millions of times each second to draw images on the screen, to feed instructions from a spreadsheet program, say, out of the disk drives into DRAMs, or to dispatch data to a modem or a printer. Perhaps most amazing of all, memory and logic chips can accomplish all this with just a trickle of electricity - far less than it takes to light a flashlight bulb.

Ted Hoff at Intel invented the microprocessor in 1971. See also 1971 in the beginning of this dictionary.

Microprocessor Controls A control system that uses computer logic to operate and monitor an air conditioning system. Microprocessor controls are commonly used on modern precision air conditioning systems to maintain precise control of temperature and humidity and to monitor the unit's operation.

Microsecond One millionth of a second. A microsecond is ten to the minus six. One microsecond — a millionth of a second — is the duration of the light from a camera's electronic flash. Light that short freezes motion, making a pitched ball or a bullet appear stationary. See Atto, Nanosecond, Femto and Pico.

Microsegmenting The process of configuring Ethernet and other LANs with a single workstation per segment. The objective is to remove contention from Ethernet segments. With each segment having access to a full 10 Mbps of Ethernet bandwidth, users can do things involving significant bandwidth, such as imaging, video and multimedia.

Microsegmentation Division of a network into smaller segments, usually with the intention of increasing aggregate bandwidth to devices.

Microslot The time between two consecutive busy/idle flags (60 bits, or 3.125 milliseconds at 19.2 kbps). It is used in CDPD only. A cellular radio term.

Microsoft Founded in 1975 by Bill Gates and Paul Allen as Micro-soft (now called Microsoft) it is (or was at the time of writing this edition of this dictionary) one of the largest software companies in the world. See the next few definitions.

Microsoft At Work A new architecture announced by Microsoft on June 9, 1993 and then put into retirement a couple of years later. Many of its features and ideas surfaced in Windows 95. It consisted of a set of software building blocks that will sit in both office machines and PC products, including:

- Desktop and network-connected printers.
- Digital monochrome and color copiers.
- Telephones and voice messaging systems.
- Fax machines and PC fax products.
- Handheld systems.
- Hybrid combinations of the above.

According to Microsoft, the Microsoft At Work architecture focuses on creating digital connections between machines (i.e. the ones above) to allow information to flow freely throughout the workplace. The Microsoft At Work software architecture consists of several technology components that serve as building blocks to enable these connections. Only one of the components, desktop software, will reside on PCs. The rest will be incorporated into other types of office devices (the ones above), making these products easier to use, compatible with one another and compatible with Microsoft Windows-based PCs. The components, according to Microsoft, are:

- Microsoft At Work operating system. A real-time, preemptive, multi tasking operating system that is designed to specifically address the requirements of the office automation and communication industries. The new operating system supports Windows compatible application programming interfaces (APIs) where appropriate for the device.
- Microsoft At Work communications. Will provide the connectivity between Microsoft At Work-based devices and PCs. It will support the secure transmission of original digital documents, and it is compatible with the Windows Messaging API and the Windows Telephony API of the Windows Open Services Architecture (WOSA).
- Microsoft At Work rendering. Will make the transmission of digital documents, with formatting and fonts intact, very fast and, consequently, cost-effective; will ensure that a document sent to any of these devices will produce high-quality output, referred to as "What You Print Is What You Fax Is What You Copy Is What You See."